

REMARKS

Favorable reconsideration of this application in light of the following discussion is respectfully requested.

Claims 1-34 are presently active in this case.

In the outstanding Official Action, Claims 1-3, 5, 6, 12-14, 16, 17, 23-25, 27, 28, and 34 were rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuda (U.S. Patent No. 6,285,470) in view of Zuniga (U.S. Patent No. 5,280,367). Claims 4, 15, and 26 were rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuda in view of Zuniga and Jin (U.S. Patent No. 5,880,858). Claims 7-9, 18-20, and 29-31 were rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuda in view of Zuniga and Dhawan (U.S. Patent No. 5,271,064). Claims 10, 21, and 32 were rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuda in view of Zuniga and Saito (U.S. Patent No. 5,966,455). Claims 11, 22, and 33 were rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuda in view of Zuniga and Allen (U.S. Patent No. 6,044,172). For the reasons discussed below, the Applicant requests the withdrawal of the obviousness rejections.

The basic requirements for establishing a *prima facie* case of obviousness as set forth in MPEP 2143 include (1) there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings, (2) there must be a reasonable expectation of success, and (3) the reference (or references when combined) must teach or suggest all of the claim limitations. The Applicant submits that a *prima facie* case of

obviousness cannot be established in the present case because the references, either taken singularly or in combination, do not teach or suggest all of the claim limitations.

The Applicant respectfully submits that the cited reference, either when taken singularly or in combination, fail to teach or suggest edge-detection of a digital color original image obtained by digitally inputting only a single side of a document color-printed on both sides of paper, and estimating background color of the paper or background color image on the single side based solely upon edge-detection information from the single side of the document with respect to a portion with low intensity of the detected edge from the single side of the document, in the manner recited in Claims 1, 12, 23, and 34.

Each of Claims 1, 12, 23, and 34 recite inventions that include steps or apparatuses for edge detection using only a single side of a document printed on both sides, and estimation of background color on the single side based solely upon edge-detection information from the single side of the document. Thus, the detected edge from the single side of the document is an important aspect of the operation of the present invention. (See, e.g., Figure 5 of the present application.) However, the Applicant notes that the Matsuda et al. reference and the Zuniga reference, either when taken singularly or in combination, fail to describe or suggest features.

The Official Action acknowledges that the Matsuda et al. reference does not disclose background color estimation based solely upon edge-detection information from a single side of the document with respect to a portion with low intensity of the detected edge from the single side of the document, among other features. The Official Action attempts to

supplement this deficiency in the teaching of the Matsuda et al. reference with the teaching in the Zuniga reference.

The Zuniga reference describes a system that converts a scanned image of a complex document into an image where text has been preserved and separated from the background. The system first subdivides the scanned image into blocks and then examines each block pixel by pixel to construct a histogram of the gray scale values of the pixels. The histogram is partitioned into first, middle, and last regions. If one or more peaks occur in the first and last regions, and a single histogram peak occurs within the middle region, then the pixels are reexamined to determine the frequency of occurrence of pixels having a gray scale level of the middle peak nearby pixels which have a level of a first region peak. If this frequency is high, the middle peak is assumed to be background information. After determining the threshold, the system rescans the block applying the threshold to separate the text from background information within the block. (See Abstract.)

The Official Action cites to Figures 2 and 3 and the description of Figure 3 in column 4 of the Zuniga reference, which shows a histogram created from a scanned block having text on a single color background. The histogram shows two peaks (304 and 306) and a valley (308). The peak (304) is described as typically representing the text (214), peak (306) is described as typically representing the white background color, and the best location for setting the threshold for separating text from the background is described as any of the gray scale levels (7, 8, or 9).

As is evident from a review of the Zuniga reference and the above description thereof, the Zuniga reference describes a system in which the peaks present on a histogram are

analyzed in order to determine which peak represents text and which peak represents background information, and then utilizes this information regarding the peaks in order to set a threshold that is used to separate the text from background information within the block when the block is rescanned. The Zuniga reference does not disclose background color estimation *based solely upon edge-detection information* from a single side of the document *with respect to a portion with low intensity of the detected edge* from the single side of the document, as recited in the independent claims of the present application. Instead, the Zuniga reference utilizes a histogram of gray scale values that must detect and analyze peaks that represent both text and background in order to decipher which is text and which is background (possibly from a number of different backgrounds). The analysis of these peaks is used to set a threshold that is later used to separate the text from background information during rescanning. Thus, in the Zuniga reference, the background information is determined using peaks that represent both text and background(s), and the Zuniga reference does not disclose background color estimation based solely upon edge-detection information with respect to a portion with low intensity of the detected edge.

Thus, the Zuniga reference does not supplement the deficiencies in the teachings of the Masuda et al. reference, which were noted both in the Official Action and in previous responses such as the Amendment After Final filed on August 26, 2005.

In addition, the Applicant notes that the Zuniga reference does not deal with the problem of removing a show-through image from a backside of a sheet of paper, and thus it is submitted that one of ordinary skill in the art would not have combined the Zuniga reference with the Matsuda et al. reference.

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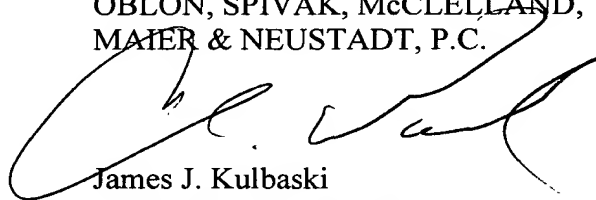
Accordingly, the Applicant submits that a *prima facie* case of obviousness cannot be established in the present case because the references, either taken singularly or in combination, do not teach or suggest all of the claim limitations. Thus, the Applicant respectfully requests the withdrawal of the obviousness rejections of Claims 1, 12, 23, and 34.

Claims 2-11, 13-22, and 24-33 are considered allowable for the reasons advanced for Claims 1, 12, and 23 from which they respectively depend. These claims are further considered allowable as they recite other features of the invention that are neither disclosed, nor suggested by the applied references when those features are considered within the context of Claims 1, 12, and 23.

Consequently, in view of the above discussion, it is respectfully submitted that the present application is in condition for formal allowance and an early and favorable reconsideration of this application is therefore requested.

Respectfully Submitted,

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